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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/687,495 | 10/16/2003 | Charles E. Hamilton | 2022927-7035362001 | 9055 |
| 45147 | 7590 | 12/13/2005 | EXAMINER | |
| PATENT LAW OFFICE OF DAVID G. BECK P. O. BOX 1146 MILL VALLEY, CA 94942 | | | VANNUCCI, JAMES | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2828 | |

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary

Application No.

10/687,495

Applicant(s)

HAMILTON ET AL.

Examiner

Jim Vannucci

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 12-31, 33 and 35 is/are rejected.
- 7) ☒ Claim(s) 10, 11, 32 and 34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10-16-03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 3 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3, this claim is has no antecedent basis for "broad-stripe" in line 2. The element should probably be "broad-stripe laser diode".

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9, 13-25, 27-31, 33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg et al.(4,905,252) in view of Braiman et al.(6,782,016).

Claim 1, figure 6 of Goldberg discloses a broad-stripe laser diode(132), an external resonator cavity(130) comprising a mirror(col. 6, lines 59-62) located adjacent to a first facet of the broad-stripe laser diode, an output coupler(150) wherein emissions from a second facet(col. 6, lines 59-62) of the broad-stripe laser diode are incident on

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the output coupler outputting a single output beam, a dispersive element(139) interposed between the broad-stripe laser diode and the output coupler reflecting a portion of the emissions back into the broad-stripe laser diode, a collimating optical system(136) interposed between the broad-stripe laser diode and the dispersive element spatially overlapping emissions from the broad-stripe laser diode onto the dispersive element, a spatial filter(148) interposed between the dispersive element and the output coupler, and means(col. 8, lines 55-57; and fig. 2) for creating a plurality of emitters across the second facet of the broad-stripe laser diode with a corresponding lateral spacing between adjacent emitters located within the external cavity that generates wavelength-periodic variations in transmission or reflectivity.

While Goldberg discloses a plurality of emitters, Goldberg does not disclose pseudo emitters.

Braiman discloses using a pseudo emitter of an etalon with a broad-stripe laser to feedback part of an output laser beam(col. 4, lines 18-21).

Claim 2, the mirror disclosed in figure 6 of Goldberg is a reflective coating applied to the first facet of the broad-stripe laser diode(col. 6, lines 59-62).

Claim 3, the collimating optical system(136) disclosed in figure 6 of Goldberg is located a distance from the second facet of the broad-stripe laser diode substantially equivalent to a collimating optical system focal length.

Claim 4, the collimating optical system(138) disclosed in figure 6 of Goldberg is located a distance from the dispersive element substantially equivalent to a collimating optical system focal length.

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Claim 5, figures 7(a) and 7(b) of Goldberg disclose a divergence reducing optical system(176 & 168) adjacent to a second facet of a broad-stripe laser diode(172) reducing divergence in the emissions corresponding to a fast axis of the broad-stripe laser diode.

Claim 6, the spatial filter disclosed in figure 6 of Goldberg comprises an aperture(146).

Claim 7, the aperture(146) disclosed in figure 6 of Goldberg is a circular apertures.

Claim 8, figure 6 of Goldberg discloses an image formed on the second facet of a laser diode. Since the spacing between diodes in the disclosed diode array is greater than the laser width(col. 4, lines 64-68), the aperture width associated with the aperture disclosed in Goldberg forms an image at the second facet of the broad-stripe laser diode that is less than twice the lateral spacing of adjacent pseudo emitters.

Claims 9 and 33, figure 7(b) of Goldberg discloses an aperture that comprises a slit(190) with a slit width that forms an image at the second facet of the broad-stripe laser diode that is less than twice the lateral spacing of adjacent pseudo emitters since figure 6 of Goldberg shows the image being the same size as the diode and Goldberg discloses a diode spacing greater than twice the diode width(col. 4, lines 64-68).

Claim 13, the pseudo emitter creating means disclosed in Braiman is comprised of an etalon(col. 4, lines 18-21).

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Claim 14, the etalon disclosed in Braiman is a reflective element of a broad-stripe laser diode that would place the etalon between the broad-stripe laser diode and a dispersive element.

Claim 15, the pseudo emitter creating means is comprised of the etalon disclosed in Braiman, and the broad-stripe laser diode, reflective coating applied to the first facet of the broad-stripe laser diode and second reflective coating applied to the second facet of the broad-stripe laser diode disclosed in Goldberg.

Claims 16 and 18, figure 2 of Braiman discloses a maximum gain corresponding to the plurality of pseudo emitters that is at least 1.5 times higher than a minimum gain corresponding to the plurality of pseudo emitters.

Claims 17 and 19, figure 2 of Braiman discloses a maximum gain that is between 2 and 4 times higher than the minimum gain.

Claims 20 and 22, figure 2 of Goldberg discloses suppressed lasing at a plurality of minimum gain locations between elements of the plurality of diode pseudo emitters.

Claims 21, 23 and 35, the plurality of minimum gain locations disclosed in Braiman correspond to a plurality of wavelengths(col. 4, lines 44-50).

Claim 24 and 30-31, figure 2 of Goldberg discloses lateral spacing that is at least equivalent to a fundamental mode diameter associated with the external resonator cavity(col. 4, lines 64-68).

Claim 27, see disclosures referenced for the above claims.

Claim 28, Goldberg discloses forming a plurality of emitters(col. 8, lines 55-57); and Braiman discloses using an etalon with a laser diode to form a pseudo emitter(col.

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4, lines 18-21). Goldberg and Braiman disclose passing a plurality of emissions corresponding to a plurality of emitters through an SBC optical system.

Claim 29, Braiman discloses the step of transmitting the output of the broad-stripe laser diode through an etalon(col. 4, lines 18-21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the etalon disclosed in Braiman with the device disclosed in Goldberg for feedback of a beam back into a laser as disclosed in Braiman(col. 4, lines 18-20).

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goldberg in view of Braiman as applied above, and further in view of Arbore et al.(6,665,320).

Goldberg and Braiman do not disclose the pseudo emitter creating means being comprised of a birefringent material.

Claim 12, Arbore discloses that a birefringent material can be used in place of an etalon for use as a wavelength selection means(col. 4, lines 36-40).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the birefringent material disclosed in Arbore with the device disclosed in Goldberg and Braiman as a wavelength selection means as disclosed in Arbore.

Allowable Subject Matter

6. Claims 10-11, 32 and 34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter. The following limitations are primarily responsible for distinguishing these claims over the prior art.

Regarding claims 10-11 and 34, the limitations concerning an aperture width associated with the aperture forms an image at the second facet of the broad-stripe laser diode less than twice the lateral spacing of adjacent pseudo emitters multiplied by a factor by which the output beam divergence exceeds the diffraction limit; regarding claims 26 and 32, the limitations concerning the lateral spacing being equivalent to at least one half of a fundamental mode diameter associated with the external resonator cavity multiplied by a factor by which the output beam divergence exceeds the diffraction limit.

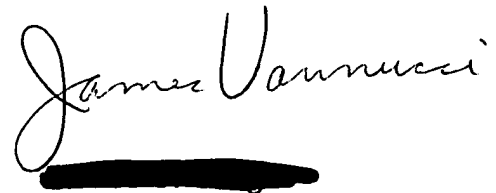
Correspondence

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Jim Vannucci whose phone number is (571) 272-1820.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center whose telephone number is (703) 308-0956.

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Papers related to Technology Center 2800 applications only may be submitted to Technology Center 2800 by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center Fax Center number is (571) 273-8300.

A handwritten signature in cursive script that reads "James Vannucci". Below the signature is a thick, solid black horizontal line.